

What is claimed is:

1. A tape automated bonding (TAB) structure for connecting a chip having one or more perimeter I/Os to a circuit board, the TAB structure comprising:
a TAB flex tape having a conductive lead pattern formed thereon, the conductive lead pattern including a plurality of leads configured to form an inner lead bond (ILB) area to connect to the one or more perimeter I/Os of the chip and an outer lead bond (OLB) area to connect to the circuit board, wherein at least one of the plurality of leads is internally routed relative to the ILB area so that the at least one lead has a contact exposed interior to the ILB portion of the TAB structure.
2. The TAB structure of claim 1, wherein the contact is positioned for mounting a discrete electrical component on or above a major surface of the chip.
3. The TAB structure of claim 1, wherein at least one of the plurality of leads is connected to a test contact pad.
4. The TAB structure of claim 1, wherein the ILB area has a generally rectangular shape.
5. The TAB structure of claim 1, wherein the OLB area has a generally rectangular shape.
6. The TAB structure of claim 1, wherein the TAB flex tape is a polyimide tape.

7. An electrical device comprising:
a circuit board;
an IC chip connected to the circuit board by a TAB leadframe; and
an electrical component mounted on or above a surface of the IC chip and electrically connected to the IC chip via a lead on the TAB leadframe which extends from the electrical component to a perimeter I/O of the IC chip.
8. The electrical device of claim 7, wherein at least two electrical components are mounted on or above the surface of the IC chip and are each electrically connected to the IC chip via leads on the TAB leadframe which extend from each of the electrical components to perimeter I/Os of the IC chip.
9. The electrical device of claim 7, wherein the electrical component includes a second IC chip.
10. The electrical device of claim 7, wherein the IC chip is adapted to monitor, regulate, and control delivery of electrical impulses to a heart and the electrical device is dimensioned to be implantable within a body.
11. An electrical device comprising:
a circuit board;
an IC chip having a plurality of perimeter I/Os;
a TAB leadframe connecting the IC chip to the circuit board, the TAB leadframe including a plurality of leads, a first area of the plurality of leads configured into a generally rectangular ILB portion which is dimensioned to directly connect one or more of the plurality of leads to the perimeter I/Os of the IC chip, a second area of the plurality of leads configured into an OLB portion for connecting one or more of the plurality of leads to the circuit board, wherein at least one of the

plurality of leads is internally routed relative to the ILB area so that the at least one lead has a contact exposed interior to the ILB portion of the TAB structure and above a major surface of the IC chip; and

an electrical component mounted on or above the major surface of the IC chip and electrically connected to the IC chip via the at least one lead which has a contact exposed interior to the ILB portion of the TAB structure and above a major surface of the IC chip.

12. The electrical device of claim 11, wherein the electrical component includes a second IC chip.

13. The electrical device of claim 11, wherein the IC chip is adapted to monitor, regulate, and control delivery of electrical impulses to a heart and the electrical device is dimensioned to be implantable within a body.

14. An implantable medical device comprising:
a lead adapted to be implanted in a body;
a monitoring circuit electrically connected to the lead; and
an implantable housing containing the monitoring circuit and having the lead connected thereto;

wherein the monitoring circuit includes an IC chip and an electrical component mounted above a surface of the IC chip and electrically connected to the IC chip via a lead extending from the electrical component to a perimeter I/O of the IC chip.

15. The implantable medical device of claim 14, wherein at least two electrical components are mounted above the surface of the IC chip and are each electrically connected to the IC chip via leads extending from each of the electrical components to perimeter I/Os of the IC chip.

16. The implantable medical device of claim 14, wherein the electrical component includes a second IC chip.

17. A method of manufacturing an electrical device, the method comprising:
connecting an IC chip to a circuit board by a TAB leadframe structure;
positioning an electronic component above a surface of the IC chip; and
connecting the electronic component to the IC chip via a lead on the TAB leadframe which extends from the electrical component to a perimeter I/O of the IC chip.

18. The method of claim 17, further comprising positioning a second electronic component above the surface of the IC chip and connecting the second electronic component to the IC chip via a lead on the TAB leadframe which extends from the electrical component to a perimeter I/O of the IC chip.

19. The method of claim 17, further comprising performing known-good-die testing of the IC chip before connecting the electronic component to the IC chip.